

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Canceled).

Claim 2 (Currently Amended): A communication system comprising:

a communication terminal device configured to communicate with a mobile terminal;

a plurality of low order switching devices included in communication paths between the communication terminal device and the mobile terminal, said plurality of low order switching devices each configured to transmit packet data to a plurality of base stations and a plurality of secondary low order switching devices in a multicast manner;

a high order switching device configured to transmit packet data to the plurality of low order switching devices in a multicast manner;

wherein the high order switching device includes a first determiner configured to determine a transmission time for the high order switching device and each of the plurality of low order switching devices to transmit the packet data resulting in simultaneous data reception at the mobile terminal, wherein the determination is based on a time period necessary for transmission of the packet data from the high order switching device to each of the plurality of low order switching devices, and a transmission time from each of the plurality of low order switching devices to the plurality of base stations;

the high order switching device includes a first transmitter configured to transmit the packet data from the high order switching device to the plurality of low order switching devices, and each of the plurality of low order switching devices includes a first transmitter configured to transmit the packet data from each of the plurality of low order switching devices to the plurality of base stations based on the transmission timing determined by the first determiner;

the high order switching device includes a first generator configured to generate a plurality of radio slot data, based on transmission target packet data, wherein said transmission target packet data includes packet data transmitted to the high order switching device, and based on the number of low order switching devices that are destinations of multicast transmission by the high order switching device, the high order switching device further including a second generator configured to generate packet data including radio slot data generated by the first generator;

each of the plurality of low order switching devices include a ~~second~~ generator configured to generate packet data, based on packet data received from the high order switching device, which includes ~~including~~ radio slot data generated by the first generator of the high order switching device; and

the high order switching device and each of the plurality of low order switching devices include a second transmitter configured to transmit the packet data including the radio slot data to the plurality of low order switching devices based on transmission timing determined by the first determiner.

Claim 3 (Currently Amended): A communication system, comprising:

a communication terminal device configured to communicate with a mobile terminal,
a plurality of low order switching devices included in communication paths between the communication terminal device and the mobile terminal, said plurality of low order switching devices each configured to transmit packet data to a plurality of base stations and a plurality of secondary low order switching devices in a multicast manner[.,,];

a high order switching device configured to transmit packet data to the plurality of low order switching devices in a multicast manner;

wherein the high order switching device includes a first determiner configured to determine a transmission time for the high order switching device and each of the plurality of low order switching devices to transmit the packet data resulting in simultaneous data reception at the mobile terminal, wherein the determination is based on a time period necessary for transmission of the packet data from the high order switching device to each of the plurality of low order switching devices, and a transmission time from each of the plurality of low order switching devices to the plurality of base stations;

the high order switching device includes a first transmitter configured to transmit the packet data from the high order switching device to the plurality of low order switching devices, and each of the plurality of low order switching devices include a first transmitter configured to transmit the packet data from each of the plurality of low order switching devices to the plurality of base stations based on the transmission timing determined by the first determiner;

the high order switching device includes a second determiner configured to determine a reception timing, wherein each of the plurality of base stations, and each of the plurality of low order switching devices receives the packet data simultaneously;

each of the plurality of low order switching devices and the base station include a difference information generator configured to generate information including a difference between a time at which each of the plurality of base stations received the packet data, and a time at which each of the plurality of low order switching devices received the packet data, and the reception timing determined by the second determiner; and

the high order switching device includes a second transmitter configured to transmit the packet data from the high order switching device to a predetermined low order switching device, and the predetermined low order switching device includes a second transmitter configured to transmit the packet data from the predetermined low order switching device to

a predetermined base station based on the difference information and the second determiner at a predetermined transmission timing.

Claim 4 (Currently Amended): A communication system according to claim 3, further comprising:

a third transmitter, at the predetermined low order switching device, configured to transmit transmission impossibility information from the predetermined low order switching device to the high order switching device if the second transmitter cannot transmit the packet data to the predetermined base station at the predetermined transmission timing; and

a fourth transmitter, at the high order switching device, configured to transmit the packet data from the high order switching device to the predetermined low order switching device at the predetermined transmission timing, based on the transmission impossibility information.

Claims 5 and 6 (Canceled).

Claim 7 (Currently Amended): A ~~multicast~~ high order switching device configured to transmit packet data in a multicast manner when a communication terminal device transmits data to a mobile terminal through a plurality of base stations, comprising:

a first determiner configured to determine a transmission time for the ~~multicast switching device~~ high order switching device and each of the plurality of low order switching devices to transmit packet data resulting in simultaneous data reception at the mobile terminal,

wherein the determination is based on a time period necessary for ~~multicast~~ transmission of the packet data from the high order switching device to each of the plurality

of low order switching devices, and a time period necessary for transmission of the packet data from each of the plurality of low order switching devices to the plurality of base stations
~~one or more of a plurality of low order switching devices to one or more base stations connected to each low order switching device and to one or more secondary low order switching devices at a mobile terminal side;~~

a first generator configured to generate a plurality of radio slot data, based on transmission target packet data,

wherein said transmission target packet data includes packet data transmitted to [[a]] the high order switching device from the communication terminal device, and based on a number of low order switching devices that are destinations of multicast transmission by the high order switching device;

a first transmitter, configured to transmit each of the transmission timings determined by the first determiner ~~to the one or more base stations connected to each of the plurality of low order switching devices and to the one or more secondary low order switching devices;~~
and

a second transmitter, configured to transmit the packet data to the one or more base stations and to the one or more ~~secondary~~ low order switching devices, based on the transmission timing that is determined by the first determiner.

Claim 8 (Currently Amended): A ~~multicast~~ high order switching device configured to transmit packet data in a multicast manner when a communication terminal device transmits data to a mobile terminal through a plurality of base stations, and which is a switching device closest to the communication terminal device included in communication paths between the mobile terminal and the communication terminal device ~~and execute the multicast transmission~~, comprising:

a first determiner configured to determine a transmission time for a high order switching device and each of the plurality of low order switching devices to transmit packet data resulting in simultaneous data reception at the mobile terminal

wherein the determination is based on a time period necessary for transmission of packet data from the high order switching device to each of the plurality of low order switching devices, and a transmission time from each of the plurality of low order switching devices to the plurality of base stations;

a first transmitter configured to transmit each of the transmission timings determined by the first determiner to the low order switching device corresponding to the transmission timing;

a first generator configured to generate a plurality of radio slot data, based on transmission target packet data that is packet data transmitted from the communication terminal device, and based on the number of devices that are destinations of multicast transmission of the packet data;

a second generator configured to generate packet data containing radio slot data generated by the first generator; and

a second transmitter configured to transmit the packet data generated by the second generator ~~to the high order switching device and~~ to each of the plurality of low order switching devices and base stations that are destinations of multicast transmission, based on the transmission timing determined by the first determiner.

Claim 9 (Currently Amended): A ~~multicast~~ high order switching device according to claim 8, further comprising:

a second determiner configured to determine a reception timing at which each of the ~~plurality of base stations~~ and each of the plurality of low order switching devices

receives the packet data, so that data reception timings at the mobile terminal become simultaneous among the plurality of base stations;

an acquisition unit configured to acquire transmission impossibility information indicating that a predetermined low order switching device cannot transmit packet data to a predetermined device at predetermined transmission timing for the predetermined device to receive the packet data at the reception timing which is determined by the second determiner, when there is a difference between at least one timing, among timing at which each of the plurality of base stations received the packet data and timing at which each of the plurality of low order switching devices received the packet data, and the reception timing determined by the second determiner, corresponding to the one timing, and when the predetermined low order switching device acquires difference information from the predetermined device after the difference information indicating the difference is generated; and

a third transmitter which, based on the transmission impossibility information, transmits packet data to the predetermined low order switching device at transmission timing for the predetermined low order switching device to transmit the packet data to the predetermined device at the predetermined transmission timing.

Claim 10 (Currently Amended): A ~~multicast~~ low order switching device configured to transmit packet data in a multicast manner when a communication terminal device transmits data to a mobile terminal through a plurality of base stations and which is a switching device other than a switching device closest to the communication terminal device in communication paths between the mobile terminal and the communication terminal device and execute the multicast transmission, comprising:

a first acquisition unit configured to acquire transmission timing of the packet data from a device which determines, for each of a plurality of low order switching devices, transmission timing at which each of the plurality of low order switching devices transmits the packet data to a plurality of base stations connected to each of the plurality of low order switching devices so that data reception timings at the mobile terminal become simultaneous among the plurality of base stations;

a second acquisition unit configured to acquire generated packet data when a high order switching device closest to the communication terminal device generates, based on transmission target packet data which is packet data transmitted from the communication terminal device and based on the number of devices which are destinations of multicast transmission by the high order switching device, a plurality of radio slot data and packet data containing the generated radio slot data;

a generator configured to generate a plurality of packet data containing radio slot data, based on the packet data acquired by the second acquisition unit and based on the number of devices that are destinations of multicast transmission; and

a first transmitter configured to transmit each of the packet data generated by the generator to [[the]] a plurality of secondary low order switching devices and base stations that are destinations of multicast transmission, based on the transmission timing acquired by the first acquisition unit.

Claim 11 (Previously Presented): A multicast switching device according to claim 10, further comprising:

a third acquisition unit configured to acquire reception timing associated with the multicast switching device when the reception timing is determined so that data reception timings at the mobile terminal become simultaneous among the plurality of base stations, the

reception timing indicating timing at which each of the plurality of low order switching devices receives the packet data;

a difference information generator which, if there is a difference between timing at which the packet data was received and the reception timing acquired by the third acquisition unit, generates difference information indicating the difference;

a second transmitter configured to transmit the difference information to a switching device executing multicast transmission that is connected to the multicast switching device at communication terminal device side;

a fourth acquisition unit configured to acquire reception timing indicating a timing at which the predetermined device receives the packet data so that data reception timings at the mobile terminal become simultaneous among the plurality of base stations, and difference information indicating a difference between timing at which the predetermined device received the packet data and the reception timing;

a third transmitter which, based on the difference information acquired by the fourth acquisition unit, transmits the packet data to the predetermined device at predetermined transmission timing for the predetermined device to receive the packet data at the reception timing; and

a fourth transmitter which, if the third transmitter cannot transmit the packet data to the predetermined device at the predetermined transmission timing, transmits transmission impossibility information to the switching device executing multicast transmission that is connected to the multicast switching device at the communication terminal device side.

Claims 12 and 13 (Canceled).

Claim 14 (Currently Amended): A communication method wherein a communication terminal device transmits data to a mobile terminal through a plurality of base stations, comprising:

transmitting, via a high order switching device, packet data in a multicast manner to a plurality of low order switching devices included in communication paths between the communication terminal device and the plurality of base stations;

transmitting the packet data in a multicast manner from the plurality of low order switching devices to the plurality of base stations;

determining a transmission time for the high order switching device and each of the plurality of low order switching devices to transmit packet data resulting in simultaneous data reception at the mobile terminal, wherein the determination is based on a time period necessary for transmission of the packet data from the high order switching device to each of the plurality of low order switching devices, and a time period necessary for transmission of the packet data from each of the plurality of low order switching devices to the plurality of base stations;

transmitting packet data resulting in simultaneous data reception at the mobile terminal, based on the transmission timing determined by the determining; and

generating a plurality of radio slot data, based on transmission target packet data.

Claim 15 (Canceled).

Claim 16 (Currently Amended): The communication system according to claim 2, each of the plurality of low order switching devices further comprising a third generator configured to generate packet data containing radio slot data based on the packet data transmitted to [[the]] a respective low order switching device and then a number of devices

that are destinations of multicast transmission by the respective low order switching device.[:,]

Claim 17 (Currently Amended): The communication system according to claim 16, each of the plurality of low order switching devices further comprising a third transmitter configured to transmit the packet data generated by the third generator to a plurality of base stations connected to each of the plurality of low order switching devices, based on transmission timing determined by the first determiner.

Claim 18 (Previously Presented): The communication system according to claim 17, wherein, each of the plurality of base stations transmits radio slot data contained in the packet data to the mobile terminal, and the mobile terminal generates the transmission target packet data, based on the radio slot data transmitted from each of the plurality of base stations.